

ENDODONTIC TREATMENT OF PERMANENT MANDIBULAR MOLAR WITH 3 DISTAL CANALS: A CASE REPORT

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ABSTRACT

The dynamic concept of the root canal system, describing a variable morphology of multiple root canals has been established as the prevailing state in mandibular molars. The prognosis for endodontic treatment in these teeth is unfavourable if clinician fails to recognize additional root canals. This case report presents the treatment of a mandibular first molar with five root canals, of which three canals were located in the Distal root. Cleaning and Shaping of the three distal & two mesial canals was performed using combination of Step Back (in Apical 1/3rd) and Crown Down (in Coronal & middle 1/3rd) technique and obturated.

Key Words: Mandibular first molar, root canal treatment, morphological variations.

INTRODUCTION

Over the years, there have been numerous studies & several cases of multiple canal systems in mandibular first molars teeth have been investigated & discussed. Skidmore & Bjordal (1971), Pomeranz et al. (1981), Weine (1981), Fabra - Campos (1985), Martinez - Berna & Badanelli (1985), Bond et al (1988), Jacobsen et al. (1994) have reported the presence of the three root canals in the mesial & the distal roots (1-7) Additionally, Stroner et al and Batty & Interian (8, 9) have reported a third canal that was

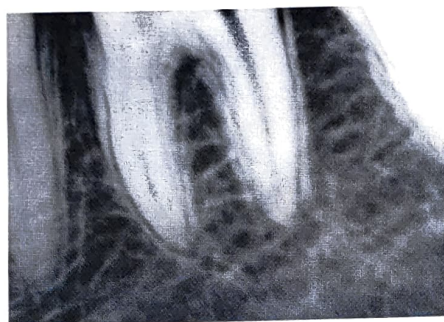


Fig 1

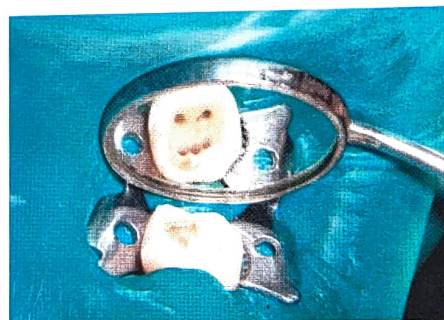


Fig 3

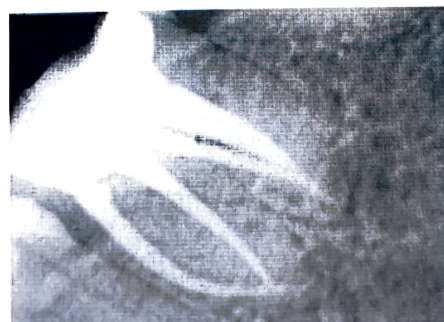


Fig 5

located in the distal root. Reeh (10) has reported a case with seven canals, consisting of four canals in the mesial root & three in the distal root. It has been postulated that secondary dentine apposition during tooth maturation

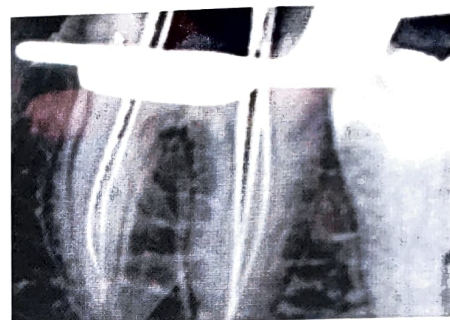


Fig 2

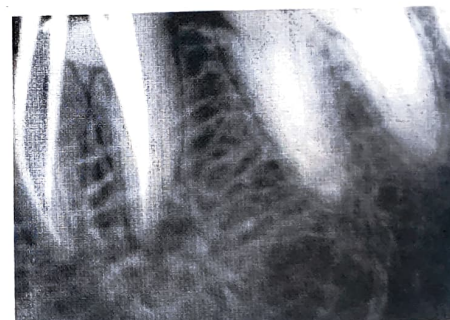


Fig 4



Fig 6

would form dentinal vertical partitions inside the root canal cavity, thus creating the root canals. A third root canal may also be created inside the root cavity of mandibular molars by this process. Such third canals are

situated centrally between the two main buccal & lingual root canals (11). The diameter of those third canals is smaller than that of the other two Martinez - Berna & Badanelli 1985 (5) and is age related because of apposition of dentine Fabra - Campos 1985 (4) with increasing reports of aberrant canal morphology, the clinician needs to be aware of its varied anatomy.

CASE REPORT

A 30 yrs old female, presented to the Department of Conservative and Endodontics, Subharti Dental College, Meerut, with the chief complain of pain & swelling in lower left posterior region since two days. The pain was spontaneous, acute & localised. Patient complained of thermal sensitivity in the same region. The clinical examination revealed deep occlusal caries involving enamel & dentine of mandibular left first molar. An Intraoral periapical radiograph (IOPA) and Electric pulp test was advised for the same tooth (Fig.1).

Radiograph revealed deep caries approaching pulp chamber & periodontal widening in relation to 36 (FDI). The tooth was tender to percussion & Electric Pulp Testing elucidated response at a higher value than the control tooth. A diagnosis of acute irreversible pulpitis with apical periodontitis was made. Endodontic treatment was initiated for the same. Access cavity preparation was accomplished using Endo access & Endo-Z burs with high speed airtar handpiece. Pulp chamber was copiously irrigated with 5% NaOCl while ensuring rubber dam isolation and high volume evacuation. Inspection of subpulpal floor using Endo-explorer revealed two canal orifice in two mesial & two distal root. However careful exploration & inspection using No. 6K file under magnifying loupes revealed the presence of two more canal orifice,

one in mesial between mesiobuccal and mesiolingual orifice, other in distal root between distobuccal and distolingual orifice (**Fig.2 & 3**).

However patency was achieved only in five canals. The middle mesial canal could not be negotiated beyond 2-3mm which was estimated using RVG (Gendex) and Apex locator (Ray Apex).Intermittent irrigation with 5% NaOCl along with EDTA as lubricant was continued throughout the procedure. Finally all canals were enlarged upto size F2 Protaper Rotary. Pre obturation master cone was verified using Intraoral Periapical Radiograph (IOPA) (**Fig. 4**).

Obturation was done using size F2 Protaper cones and AH Plus sealer. Access cavity was sealed using IRM (**Fig. 5**).An appointment was scheduled with the Department of Radiology for Dentascan of the concerned tooth to ascertain the root morphology. The Dentascan confirmed the presence of two roots (one mesial and one distal) with three orifices in the distal canal (**Fig. 6**).

DISCUSSION

According to the literatures the incidence of third distal canals is 0.6% (Fabra - Campos 1985). The incidence of third canal in the distal root of mandibular molars was found to be much lower than in the mesial root Martinez - Berna & Badanelli (1985). The larger mesiodistal dimension of the distal root, compared to mesial root, may account for the rare incidence of third canal created by dentine apposition in distal roots.

In this case report there was confluence of the third middle distal canal with Distobuccal & Distolingual canals & having common apical termination.

Instrumentation is one of the key factors in the success of endodontic therapy & the clinician should be aware of the varied anatomy. An avid clinician should be always keen to

explore the possibility of additional canals whenever in doubt, with the assistance of technologies such as the those of magnification and illumination.

In this case report the hybrid technique was followed to prevent strip perforation.

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